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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/770,319 | 01/26/2001 | Shi-Chang Wooh | MIT-116J | 7522 |

7590 09/05/2003
Iandiorio & Teska
260 Bear Hill Road
Waltham, MA 02451-1018

EXAMINER

MOLLER, RICHARD ALAN

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2856

DATE MAILED: 09/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/770,319

Applicant(s)
Wooh

Examiner
RICHARD MOLLER

Art Unit
2856



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amdt D 2/6/2003 & Election 6/19/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-29 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 (6 pgs) 6) ☐ Other:

RICHARD MOLLER
PRIMARY EXAMINER
RB 9/3/03

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DETAILED ACTION

Response to Amendment

1. This action is responsive to the Election filed June 19, 2003, in which Applicant elected Specie II, directed to laser based acoustic or ultrasound transducers, which is depicted in Figure 11. Since Applicant neglects to present any reasons for traversal, this election is hereby made FINAL.

2. This Action is also responsive to the Amendment filed February 6, 2003, which amended claims 22, 24, 25, 26, 28 and 29. Claims 22-29 are pending in this application.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 22-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Monchalin (US 4,659,224), of record.

5. Re claims 22-29: '224 discloses a flaw detection system for detecting flaws in a medium, comprising: (Figs. 1 & 4): Transducer means comprise the elements taught in Figure 4, which are spaced from the medium to be inspected (work piece 20), wherein the transducer means "introduces" ultrasonic acoustic signals to the medium 20 with a predetermined frequency and

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then senses acoustic signals from the medium 20 which are Doppler shifted in frequency representative of flaws in the medium 20. In the instant invention, '224's transducer means uses laser 8 to emit a monochromatic coherent (i.e., a single carrier frequency) beam of light to excite acoustic signals in the medium 20 (col. 4, lines 55+). These acoustic signals cause the medium (i.e., the workpiece) to vibrate or deform thereby causing the so-called "relative motion" between the medium and '224's system.

Receiver means consists an optical frequency spectrum analyzer (i.e., Interferometer 4) (see Figure 1; col. 4, lines 1-10), which serves as a separate laser-based receiver, for sensing the Doppler shifted acoustic signals in the medium, which is representative of flaws in the medium. '224's receiver means is a type of air-coupled transducer, wherein the laser beam is "coupled" through a medium comprising air.

6. Claims 22-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Penny (US 3,978,713), of record.

7. Re claims 22-29: '713 discloses a "system" comprising (see "713, Fig.): Air-coupled transducer means (Laser 12) for generating (introducing) an acoustic signal in medium 10. The generated acoustic signal thereby causes the medium 10 to vibrate (i.e., causes "relative motion") between the medium and '713's "system". This motion is sensed by Light Detector 25 as a result of optical interference between coherent (i.e., single frequency) beam 21 from Interferometer Laser 20 and the reflected light from medium 10. The Doppler shift indicates flaws in the medium.

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Response to Arguments

8. Applicant's arguments in the Amendment filed February 6, 2003, have been fully considered but they are not persuasive.

9. Re claims 22-29, Applicant argues (Remarks, pgs. 4-8) that the present invention is for detecting flaws in a medium by sensing a "Doppler shift in a carrier caused by a flaw" by using sensors that sense "acoustic signals", such as "air-coupled transducers" and that '224's invention does not disclose "air-coupled transducers".

10. On the contrary, Applicant specifically elected laser-based acoustic or ultrasound transducers. Monchalin '224 specifically teaches (see '224, Fig. 9a & 9b) Interferometer 4 as an example of a laser-based acoustic transducer, whereby any flaw in the vibrating surface of the medium scatters the source optical beam, which is detected by Monchalin's Interferometer 4 as a subsequent Doppler shift. The Doppler shift is the result of the interaction of the optical laser beam with the ultrasonic wave (see '224, col. 2, line 55 - col. 3, line 40 & col. 9, lines 1-20).

Accordingly, '224 teaches an air-coupled transducer for sensing an acoustic signal.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Moller, whose telephone number is (703)-308-6715. The examiner can normally be reached on Monday-Thursday from 8:30 AM - 6:00 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams, can be reached on (703)-305-4705. The fax number for this Group is (703)-308-7382.

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Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703)-305-4900.

A handwritten signature in black ink, appearing to be 'R. Moller', with a stylized, cursive script.

Richard A. Moller
Primary Examiner
September 3, 2003